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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,962	01/22/2004	Robert D. Huttemann	HUTTEMANN 9-2	6344

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EXAMINER	
OWENS, DOUGLAS W	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,962	HUTTEMANN ET AL.	
	Examiner	Art Unit	
	Douglas W. Owens	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-28,30-33,36 and 37* is/are rejected.

7)☒ Claim(s) *29,34 and 35* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 28, 2006 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 25 – 28, 32, 36 and 37 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,645,821 to Bailey et al.

Regarding claim 25, Bailey et al. teach an integrated circuit (Fig. 1, for example), comprising:

transistors (Col. 2, lines 44 – 46);

interconnects (100; Col. 2, lines 46 – 54) formed in dielectric layers (50, 90) located over the transistors that interconnect the transistors to form an operative integrated circuit; and

a thin film resistor device interconnected to the transistors, including:

a resistive layer (60) located on a first dielectric layer (50);

first and second contact pads (70) located atop the resistive layer; and

a second dielectric layer (90) located directly on the resistive layer and directly on side surfaces of the first and second contact pads.

Regarding claim 26, Bailey et al. teach an integrated circuit further including a first and second interconnect (100) that contacts the first and second contact pads respectively.

Regarding claim 27, Bailey et al. teach an integrated circuit further including interconnect metallization structures (40) wherein the first dielectric layer (50) is located between the interconnect metallization structure and the resistive layer.

Regarding claim 28, Bailey et al. teach an integrated circuit, wherein each of the first and second interconnects contact an interconnect metallization structure (Abstract; Col. 3, lines 16 – 20).

Regarding claim 32, Bailey et al. teach an integrated circuit, wherein the resistive layer includes tantalum nitride (Col. 3, lines 27 – 30).

Regarding claim 36, Bailey et al. teach an integrated circuit, wherein the resistive layer has a thickness ranging from 5 – 200 nm (Col. 3, lines 30 and 31), which includes the range of 20 – 80 nm.

Regarding claim 37, this is considered a suggested use limitation and has not been given any patentable weight.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al.

Bailey et al. teach that interconnects may be made of aluminum (Col. 2, lines 49 – 51). Bailey et al. do not teach an integrated circuit, wherein the first and second interconnects (100) comprise aluminum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use aluminum for the first and second interconnects, since it is desirable to use materials that are well suited for the intended use.

6. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. as applied to claims 26 and 30 above, and further in view of US Patent No. 6,424,040 to Nag et al.

Bailey et al. teach an integrated circuit, wherein the interconnects can comprise aluminum. Bailey et al. do not teach an integrated circuit, wherein the interconnects comprise a Ti/TiN/Al/TiN stack. Nag et al. teach an integrated circuit, wherein a typical interconnect comprises a Ti/TiN/Al/TiN stack (Col. 1, lines 25 – 28). It would have been

obvious tone of ordinary skill in the art at the time the invention was made to incorporate the teaching of Nag et al. into the device taught by Bailey et al., since it is desirable to prevent unwanted diffusion of Al, as well as provide an adhesion layer for the TiN barrier layer.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. as applied to claim 25 above, and further in view of US Patent No. 4,161,431 to Matshunaga et al.

Bailey et al. do not teach an integrated circuit, wherein the resistive layer includes tantalum pentoxide. Matshunaga et al. teach an integrated circuit, wherein the resistive layer includes tantalum pentoxide (Col. 3, lines 47 – 51). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Matshunaga et al. into the device taught by Bailey et al., since it is desirable to use materials that are well suited for the intended use.

8. Claims 29, 34 and 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed May 22, 2006 have been fully considered but they are not persuasive.

Applicant argues that Bailey et al. do not teach a second dielectric layer directly on the resistive layer and the first and second contact pads. This teaching can be seen

in Fig. 1 where the second dielectric layer (90) is located directly on the resistive layer and directly on side surfaces of the first and second contact pads.

Applicant aruges that the second dielectric (90) is not located directly on the first and second contact pads. It can be seen in Fig. 1, that the second dielectic (90) is located directly on the side surfaces of the contact pads. **There is no requirement in the claims with respect to the surface(s) of the contact pads, such as the upper surface, that the second dielectric layer must be located directly on.**

10. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Douglas W Owens
Primary Examiner
Art Unit 2811

DWO
September 4, 2006